A STUDY PROPOSAL TO PROVIDE BASELINE WATER QUALITY INFORMATION FOR THE SACRAMENTO AND SAN JOAQUIN RIVER DELTA AND ESTUARY

Prepared by:

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Submitted to:

THE CALFED BAY-DELTA CATEGORY III
SACRAMENTO RIVER WATERSHED PROGRAM
FUNDING OPPORTUNITIES FOR
WATERSHED PROGRAMS AND PROJECTS

July 18, 1997

TECHNICAL PROPOSAL

INTRODUCTION

This proposal for the offer of technical service is being made in response to Request for Proposals issued by CALFED BAY-DELTA PROGRAMS CATEGORY III. This proposal requests funds to begin differentiating and quantifying the magnitude of damage to anadromous runs of fish populations by contaminants in California waters. The proposal recommends an intensive and extensive water quality monitoring survey be implemented in California throughout those aquatic regions most frequented by declining populations of Chinook salmonids. It is a proposal to supply all superintendence, labor, specialization, sample collection, transportation, speciation and laboratory analyses required to furnish baseline water quality information for salmon restoration and management purposes at indicative key sample locations.

California salmon stocks have declined dramatically in these habitats due to the low production and survival of juveniles. Numerous factors, including habitat degradation, predation, thermal pollution, reduced flow, entrainment and impingement in water diversions, fishing pressure, contaminants and water pollution, are postulated as possible causes for these losses.

In-river water quality conditions in the Sacramento and San Joaquin River Basins, and the Delta and Estuary Region have not been thoroughly inventoried and classified. To date, only limited efforts have been made by the U.S. Geological Survey, and the Aquatic Toxicology Laboratory of the California Department of Fish and Game to accurately assess and analyze water quality conditions as they relate to fish species throughout these regions. Consequently, the overall impact of substandard water quality levels to California's depressed salmon runs in these areas is not completely understood. Contaminants can have subtle and not so subtle physiological effects on fish under conditions of chronic exposure.

Low water quality levels can have disastrous impacts on freshwater fish populations. California's anadromous salmonids spend much of their early life stages (egg, prolarval, larval, and juvenile) in freshwater rivers and low salinity areas of the delta and estuary that are subject to a host of contaminants. Of all the live stages, larval fishes are more vulnerable to the influences of contaminants. Poor water conditions created by the use of various market chemicals (pesticides, herbicides and trace metals from old mining operations) can be severely aggravating and debilitating to young fish populations, especially if they occur in combination or at critical and inopportune times of the year, such as during emigration. Contaminant influences leading to poor water quality are further exacerbated during periods of low water flow years, resulting in the severe suppression of many game and non-game aquatic species. Since much of the California Valley Region is truncated by large irrigation canals and water diversion projects, low flow situations even during wet years are a frequent occurrence.

PROJECT OBJECTIVES

A scientific water quality proposal of this type would (1) help to identify either the presence or absence and location of potentially debilitating or lethal (point or non-point) sources of pollution throughout any given year, and (2) identify at which times of the year, if any, they do in fact occur and whether or not the contaminants are in high enough concentrations to present a biological hazard to emigrating juvenile and migrating adult salmonids, and (3) further assist in facilitating sound ecosystem management practice and remedial/mitigation measures for salmon restoration.

PROJECT DESCRIPTION

The proposed water quality sampling plan would use water samples collected at twelve key sites and hatchery reared fall-run Chinook salmon deployed as aquatic indicators in live containers at each of these sites to assist with field water quality diagnosis. Every year an acceptable series of water samples would be collected across the main flow pattern or channel at .2 and .8 levels of the water column, refrigerated and analyzed for hazardous chemical substances. In addition to this, approximately 200 (cwt) coded wire tagged larvae and/or pre-smolt juvenile fish would be dispensed in a live container and utilized to assess any immediate adverse environmental impacts on the species. The cwt fish would originate from 60,000 larvae and pre-smolt groups tagged at a hatchery site. This number includes excess fish to cover natural mortalities, test, and control sample fish. These fish would be periodically released after a two-week exposure time (366-hr LC50s) at the test site and freshened with a new group of fish from the same tag lot. It is estimated this two-week test period would simulate the young fishes' drift down river and ultimate exposure time to any hostile pollutants in the estuary and delta region. For long-term differential study purposes, the fish would be tagged in approximately five thousand tag code lots. Along with any normal or abnormal mortality that has occurred, a random test sample of ten live fish (more if larval fish are used due to their smaller body size) would be saved from the live container and sacrificed for toxicology analyses. Twice during the year, a separate 10 fish subsample from the supply fish located at the hatchery site would be used as a control in order to make comparisons of contaminant concentration between exposed and unexposed specimens. The surviving remainder of the test group fish would then be released at the test site to continue their outmigration journey.

MONITORING PLAN

A comprehensive monitoring program will be implemented as an integral part of the study. Existing water quality parameters (e.g., temperature, pH, dissolved oxygen, conductivity, salinity, turbidity, flows and main source) as well as other pertinent information at the time of the survey will be monitored and recorded daily for future use. Water samples collected on a bi-monthly basis in sterile pint containers will be dry iced and stored for immediate transportation to a laboratory for final analyses.

Data gathering will include a record of all mortalities which occur and obvious causes. Mortalities and living fish specimens will have tissues analyzed to assess levels of contaminations. A general organosomatic index of the release fishes' general physiology will be completed during the test phase of the study and at final release. Recoveries of tagged released fish in the ocean fishery and spawning escapement surveys will be conducted over the 3 to 5 year period following the release of all remaining fish liberated in the replicate groups. In addition, the study will yield information on long-term survival rates, straying, growth, year of return, fecundity and other pertinent management information.

REPORTING

A written annual report, in an acceptable format, will be prepared and provided each year to the CALFED BAY-DELTA Committee and the California Department of Fish and Game. The report will summarize the following annual results: water quality analyses, concentrations of contaminants by location, tag codes and numbers of fish included, mortalities, release numbers, location, all pertinent dates, exposure times, water parameters, flows and any unique behavioral responses observed during the test period. When available, the reports will include tag recovery information from the ocean fishery or escapement surveys by DFG and others.

The data generated by this study will provide a significant contribution to contaminant damage assessment in fish populations as it will attempt to:

(1) establish the present levels of pesticides, herbicides and trace metal contaminants at various relevant locations,
(2) compare contaminant levels in impacted populations to less impacted populations,
(3) compare contaminant levels in fish to contaminant levels in water samples collected at the study site,
(4) assess contaminant levels to indications of inferior health among the test and control groups of specimens, and
(5) supply factual answer to the question as to whether or not contaminants do pose a hazard for young larval and juvenile salmonids in the lower river and delta region.

CONTAMINANTS

Analyses will be performed for the following pesticides/insecticides, herbicides, and trace metals:

Pesticides/Insecticides: Organophosphate and carbamate

Organophosphates include diazinon, malathion, parathion, and methyl parathion.

Carbamate insecticides are Sevin and Carbofuran.

Herbicides and Fungicides include amitrol, diquat, endothall, molinate, silvex, and paraquat.

Trace Metals: Copper, zinc, cadmium, lead, and mercury (both methylated and non-methylated forms)

STUDY TIME LINE

Study sampling is scheduled to begin on January 1, 1998, and proceed through December 31, 2002. Water and specimen sampling will consist of a bi-monthly sample collection period throughout the course of each study year at a dozen locations. The water quality analysis and specimen samples are scheduled to last a total of three years, and the resulting follow-up work from the annual fish returns an additional two years.

RESPONDENTS

The respondents are employees of the California corporation known as Big Eagle & Associates, Inc. Big Eagle & Associates, Inc., is a multi-disciplinary firm specializing in supplying expertise in natural resources to aid in the resolution of sensitive and controversial environmental issues.

Big Eagle & Associates, Inc.

Located in Red Bluff, California, Big Eagle & Associates, Inc., offers multi-disciplinary services in the fields of fish and wildlife management, stream ecology, environmental planning, forestry, and environmental impact assessment. The company was formed as an enterprise in 1992 by principals who have been offering services in fisheries research since 1965. The firm and its principal, has conducted research for county, state, federal, and international government agencies; hydro power companies; privately owned companies including major forestry and timberland owners; non-profit organizations; and California Indian Tribes. Most recently the firm completed a population abundance survey ***"Status Review"*** of seven species of salmonids throughout the Pacific west coast (British Columbia, Washington, Idaho, Oregon, and California) for the National Marine Fisheries Service.

The firm is fully licensed and insured. It is fully computer operational with the ability to analyze data and issue reports. The firm's personnel are available for immediate response pending acceptance of this offer.

The firm agrees to collaborate and coordinate fully with all Federal, State, and private agencies, existing laws and regulations, and/or other parties with a vested interest in the study requirements and results.

Principal Investigators

Two individuals will be principal participants in the proposed activity: Jonathan Phinney, and Mr. Jerry Big Eagle, of Big Eagle & Associates, Inc.

Jonathan Phinney, Ph.D. will serve as lead project chemist, ensuring water, fish and trace metal samples are properly collected, preserved and analyzed in the key cell areas of the water quality survey sites. These sampling services will include presentation of correct environment collection materials and post-handling procedures. Throughout each facet of the project's trace sampling, Dr. Phinney will be responsible for all field-collected cell samples, laboratory measurements, final data analysis and summary report.

Jerry Big Eagle, B.S., will serve as Project Manager and will be responsible for the overall administration and management of the contract. Mr. Big Eagle has over thirty years' experience in fishery science. He will oversee the collection of information and will participate in all scoping sessions and field operations. He has extensive management experience in coordinating, directing, and planning large inter-disciplinary projects involving natural resource problems. He is trained and experienced in the field of fishery and forest management, data analysis and standardization, and the application of these analyses to the prudent resolution of natural resource management issues. Mr. Big Eagle has performed in the role of lead senior biologist on a multitude of water resource, fishery, aquatic ecology and forest habitat assessment projects. In this role, he was responsible for the management and quality control of all facets of these research studies.

Special Notation: ***Certain chemical tests or their frequency may not be deemed necessary by the approval board and would therefore reduce budget cost. In addition, the tagging portion of this water quality proposal depends heavily on CDFG, USFWS, or EBMUD's willingness to supply their tagging trailers, fish, and ponding space to complete this phase.***

ANNUAL BUDGET

ITEM	NUMBER	COST
Water Samples	288	$ 50,395
Specimen Samples	288	28,823
Trace Metals	120	6,720
Binary Tag Wire	60,000	3,635
Tagging Labor	6	2,520
Equipment (computers, meters, etc.)	—	7,990
Vehicles (trucks)	2	14,400
Boats/Motors	2	19,975
Gas/Oil	—	7,230
Supplies (phones, faxes, copies, etc.)	—	2,991
Travel (per diem)	—	15,810
Lodging	—	17,128
Accounting	1	4,500
Statistician	1	12,000
Labor/Report	5	115,585
TOTAL		**$309,702**

Item 7

BIDDER'S BOND

We Big Eagle & Associates, Inc

_____, as PRINCIPAL, and

as SURETY, are held and firmly bound unto the State of California in the penal sum of TEN PERCENT (10%) OF THE TOTAL AMOUNT OF THE BID of the Principal above named submitted by said Principal to the State of California, acting by and through the Agency Resources, for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made, to the Secretary of the Resources Agency to which said bid was submitted, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

In no case shall the liability of the surety here under exceed the sum of $_____.

THE CONDITION OF THIS OBLIGATION IS SUCH,

That whereas the Principal has submitted the above-mentioned bid to the State of California, as aforesaid, for certain construction specifically described as follows, ~~for which bids are to be opened at~~

_____, ~~California on~~ _____,

~~(Insert name of city where bids will be opened)~~ ~~(insert date of bid opening)~~

for _____

(Copy here the exact description of work, including location, as it appears on the proposal)

NOW, THEREFORE, If the aforesaid Principal is awarded the contract and, within the time and manner required under the specifications, after the prescribed forms are presented to him for signature, enters into a written contract, in the prescribed form, in accordance with the bid, and files two bonds with the Department, one to guarantee faithful performance and the other to guarantee payment for labor materials, as required by law, then this obligation shall be null and void; otherwise, it shall be and remain in full force and virtue.

IN WITNESS WHEREOF, We have hereunto set our hands and seals on this _____

day of _____, 19 ____.

_____ (Seal)

_____ (Seal)

_____ (Seal)

Principal

_____ (Seal)

_____ (Seal)

_____ (Seal)

Surety

_____ (Seal)

Address _____

NOTE: Signatures of those executing for the surety must be properly acknowledged.

Item 9 (1 P/2)

CERTIFICATE OF INSURANCE

This is to verify that the following described policy or policies have been issued to the insureds named below:

Bidder: Big Eagle & Associates, Inc.
19105 Ridge Road
Red Bluff, CA 96080

and The State of California and all officers and employees thereof

With respect to the work performed under Contract # _____, Specification # _____.

for CALFED BAY-DELTA

* Coverage	Company & Policy #	Term Mo.	Term Day	Term Year	Limits of Liability
A) Business Liability	M567844	9	1	96	1,000,000
		9	to 1	97	
B)		—	—	—	
		—	to	—	
C)		—	—	—	
		—	to	—	
D)		—	—	—	
		—	to	—	

It is further certified that:

The policy(ies) become(s) effective not later than the time of commencement of work under the aforementioned Contract.

The policy(ies) name(s), as additional insured with the bidder, the State and all officers and employees of the State.

The minimum limits of coverage of the aforementioned insureds are as follows:

Combined Single Limit ..... $ 1,000,000
(each occurrence)

*Workers Compensation not applicable on this form.

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I-001520

PAYMENT BOND TO ACCOMPANY CONSTRUCTION CONTRACT

(CIVIL CODE SECTION 3247)

Item 10.

BOND NO. _____

The premium on this bond is $ N/A for the term _____

Know All Men By These Presents:

THAT The State of California, acting by and through the _____

has awarded to _____ whose address is

(CONTRACTOR/PRINCIPAL)

_____ as Principal, a contract for the work described as follows:

WHEREAS, The provisions of Civil Code Section 3247 require that the Principal file a bond in connection with said contract and this bond is executed and tendered in accordance therewith.

NOW THEREFORE, Principal and _____, a corporation organized

(SURETY)

under the laws of _____, and authorized to transact a general surety business in the State of California, as Surety, are held and firmly bound to the People of the State of California in the penal sum of _____ ($_____), for which payment we bind ourselves, our heirs, executors, administrators, successors and assigns jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH,

1. That if said Principal or its subcontractors shall fail to pay any of the persons named in Civil Code Section 3181, or amounts due under the Unemployment Insurance Code with respect to work or labor performed under the contract, or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of the Principal and subcontractors pursuant to Section 13020 of the Unemployment Insurance Code, with respect to such work and labor, that the Surety herein will pay for the same, otherwise this obligation is to be void. In case suit is brought upon this bond, the Surety will pay a reasonable attorney's fee to be fixed by the court.
2. This bond shall inure to the benefit of any of the persons named in Civil Code Section 3181 as to give a right of action to such persons or their assigns in any suit brought upon this bond.
3. The aggregate liability of the Surety hereunder, including costs and attorneys fees, on all claims whatsoever shall not exceed the penal sum of the bond in accordance with the provisions of Section 996.470(a) of the Code of Civil Procedure.
4. This bond is executed by the Surety, to comply with the provisions of Chapter 7, Title 15, Part 4, Division 3 of the Civil Code and of Chapter 2, Title 14, Part 2 of the Code of Civil Procedure and said bond shall be subject to all of the terms and provisions thereof.
5. This bond may be canceled by the Surety in accordance with the provisions of Sections 996.310 et. seq. of the Code of Civil Procedure.
6. This bond to become effective _____.

_____ (NAME OF SURETY)

_____ (ADDRESS)

I certify (or declare) under penalty of perjury that I have executed the foregoing bond under an unrevoked power of attorney.

Executed in _____ (CITY AND STATE) on _____ (DATE)

under the laws of the State of California.

▶ _____

(SIGNATURE OF ATTORNEY-IN-FACT)

_____

(PRINTED OR TYPED NAME OF ATTORNEY-IN-FACT)

Item 12

Agreement No. _____

Exhibit _____

STANDARD CLAUSES –
SMALL BUSINESS PREFERENCE AND CONTRACTOR IDENTIFICATION NUMBER

NOTICE TO ALL BIDDERS:

Section 14835, et. seq. of the California Government Code requires that a five percent preference be given to bidders who qualify as a small business. The rules and regulations of this law, including the definition of a small business for the delivery of service, are contained in Title 2, California Code of Regulations, Section 1896, et. seq. A copy of the regulations is available upon request. Questions regarding the preference approval process should be directed to the Office of Small and Minority Business at (916) 322-5060. To claim the small business preference, you must submit a copy of your certification approval letter with your bid.

Are you claiming preference as a small business?

✓ Yes* ____ No

*Attach a copy of your certification approval letter.